UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 19, 2005

Mr. P. C. Gregory, Manager
Packaging Engineering
Washington TRU Solutions, LLC
P.O. Box 2078
Carlsbad, NM 88221-2078

SUBJECT: CERTIFICATES OF COMPLIANCE FOR MODEL NOS. TRUPACT-II AND HALFPACT PACKAGES

Dear Mr. Gregory:

As requested by your application dated October 4, 2004, as supplemented March 4 and June 8, 2005, enclosed are Certificate of Compliance No. 9218, Revision No. 18, for the Model No. TRUPACT-II package and Certificate of Compliance No. 9279, Revision No. 3, for the Model No. HalfPACT package. These certificates supersede, in their entirety, Certificate of Compliance No. 9218, Revision No. 17, dated August 23, 2004, and Certificate of Compliance No. 9279, Revision No. 2, dated August 23, 2004. These Certificates of Compliance have been issued to the U.S. Department of Energy (DOE) as requested. Changes made to the enclosed certificates are indicated by vertical lines in the margin. The staff's Safety Evaluation Reports are also enclosed.

Those on the attached list have been registered as users of the packages under the general license provisions of 10 CFR 71.17 or 49 CFR 173.471 and these conditions. These approvals constitute the authority and conditions to use these packages for shipment of radioactive material and for the packages to be shipped in accordance with the provisions of 49 CFR 173.471. Registered Users may request by letter to remove their names from the Registered Users List.

If you have any questions regarding these certificates, please contact me or Meraj Rahimi of my staff at (301) 415-8500.

Sincerely,

Michael T. Markley, Acting Chief
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket Nos. 71-9218 & 71-9279
TAC Nos. L23774 & L23775

Enclosures:
1. Certificate of Compliance No. 9218, Rev. No. 18
2. Safety Evaluation Report for TRUPACT-II
3. Certificate of Compliance No. 9279, Rev. No. 3
4. Safety Evaluation Report for HalfPACT

cc w/encl: R. Boyle, Department of Transportation
J. M. Shuler, Department of Energy
RAMCERTS
Registered Users

NRC FORM 618
(8-2000)
10 CFR 71

U.S. NUCLEAR REGULATORY COMMISSION

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE		PAGES
9218	18	71-9218	USA/9218/B(U)F-85	1	OF	5

2. PREAMBLE

a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."

b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

a. ISSUED TO *(Name and Address)*

Department of Energy
Washington, DC 20585

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

Washington TRU Solutions LLC application dated October 4, 2004, as supplemented

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model No.: TRUPACT-II

(2) Description

A stainless steel and polyurethane foam insulated shipping container designed to provide double containment for shipment of contact-handled transuranic waste. The packaging consists of an unvented, 1/4-inch thick stainless steel inner containment vessel (ICV), positioned within an outer containment assembly (OCA) consisting of an unvented 1/4-inch thick stainless steel outer containment vessel (OCV), a 10-inch thick layer of polyurethane foam and a 1/4 to 3/8-inch thick outer stainless steel shell. The package is a right circular cylinder with outside dimensions of approximately 94 inches diameter and 122 inches height. The package weighs not more than 19,250 pounds when loaded with the maximum allowable contents of 7,265 pounds.

The OCA has a domed lid which is secured to the OCA body with a locking ring. The OCV containment seal is provided by a butyl rubber O-ring (bore seal). The OCV is equipped with a seal test port and a vent port.

The ICV is a right circular cylinder with domed ends. The outside dimensions of the ICV are approximately 73 inches diameter and 98 inches height. The ICV lid is secured to the ICV body with a locking ring. The ICV containment seal is provided by a butyl rubber O-ring (bore seal). The ICV is equipped with a seal test port and vent port. Aluminum spacers are placed in the top and bottom domed ends of the ICV during shipping. The cavity available for the contents is a cylinder of approximately 73 inches diameter and 75 inches height.

5.(a)(3) Drawings

The packaging is constructed in accordance with Packaging Technology, Inc., Drawing No. 2077-500 SNP, Sheets 1 through 11, Rev. V. The contents are positioned within the packaging in accordance with the Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC), Rev. 2, Section 2.9, "Payload Container/Assembly Configuration Specifications." The standard pipe overpack is constructed and assembled in accordance with Packaging Technology, Inc., Drawing No. 163-001, Rev. 6. The S100 pipe overpack is constructed and assembled in accordance with Packaging Technology, Inc., Drawing No. 163-002, Rev. 4. The S200 pipe overpack is constructed and assembled in accordance with Packaging Technology, Inc., Drawing No. 163-003, Rev. 3. The S300 pipe overpack is constructed and assembled in accordance with Packaging Technology, Inc., Drawing No. 163-004, Sheet 1, Rev. 1. The compacted puck drum spacers needed for the purpose of maintaining subcriticality in 55-, 85-, and 100-gallon drums are constructed and assembled in accordance with Drawing No. 163-006, Rev. 0.

(b) Contents

(1) Type and form of material

Dewatered, solid or solidified transuranic and tritium-contaminated materials and wastes. Materials must be packaged in one of the following payload containers: a 55-gallon drum, an 85-gallon drum, a 100-gallon drum, a standard waste box (SWB), a standard pipe overpack, an S100 pipe overpack, an S200 pipe overpack, an S300 pipe overpack, or ten-drum overpack (TDOP). The payload containers are described in CH-TRAMPAC, Rev. 2, Section 2.9, "Payload Container/Assembly Configuration Specifications." Materials must be restricted to prohibit explosives, corrosives, nonradioactive pyrophorics and pressurized containers. Within a payload container, radioactive pyrophorics must not exceed 1 percent by weight, and free liquids must not exceed 1 percent by volume. Flammable organics and methane are limited along with hydrogen to ensure the absence of flammable gas mixtures in TRU waste payloads as described in Chapter 5.0 of CH-TRAMPAC, Rev. 2. For payloads of content code LA 154 and SQ 154, the absence of flammable gas mixtures is ensured as described in Appendix 6.12 of the CH-TRU Payload Appendices, Rev. 1. For payload configurations with an unvented heat-sealed bag layer, the absence of flammable gas mixtures is ensured as described in Appendix 6.13 of the CH-TRU Payload Appendices, Rev. 1.

(2) Maximum quantity of material per package

Contents not to exceed 7,265 pounds including shoring and secondary containers. The maximum gross weight for a payload container not to exceed the following:

(I) 1,000 pounds per 55-gallon drum,
(ii) 328 pounds per 6-inch standard pipe overpack,
(iii) 547 pounds per 12-inch standard pipe overpack,
(iv) 550 pounds per S100 pipe overpack,
(v) 547 pounds per S200 pipe overpack,
(vi) 547 pounds per S300 pipe overpack,
(vii) 1,000 pounds per 85-gallon drum,

(viii) 1,000 pounds per 100-gallon drum,
(ix) 4,000 pounds per SWB, or
(x) 6,700 pounds per TDOP.

5.(b)(2) Maximum quantity of material per package (continued)

Maximum number of payload containers per package and authorized packaging configurations are as follows:

(I) 14 55-gallon drums,
(ii) 14 standard pipe overpacks,
(iii) 14 S100 pipe overpacks,
(iv) 14 S200 pipe overpacks,
(v) 14 S300 pipe overpacks,
(vi) 8 85-gallon drums,
(vii) 6 100-gallon drums,
(viii) 2 SWBs, or
(ix) 1 TDOP.

Fissile material not to exceed the limits specified in CH-TRAMPAC, Rev. 2, Section 3.1, "Nuclear Criticality."

The S100, S200, and S300 pipe overpack payloads shall meet the curie limits specified in CH-TRAMPAC, Rev. 2, Section 3.3, "Activity Limits."

Maximum decay heat per package not to exceed 40 watts. Decay heat per payload container not to exceed the values given in CH-TRAMPAC, Rev. 2, Table 5.2-1, "List of Approved Alpha-numeric Shipping Categories, Maximum Allowable Hydrogen Gas Generation Rates, and Maximum Allowable Wattages," or calculated for approved shipping categories in accordance with the methodology specified in Section 5.2.3 of CH-TRAMPAC, Rev. 2. For content code LA 154 and SQ 154 payloads, decay heat per payload container not to exceed the values specified in Appendix 6.12 of CH-TRU Payload Appendices.

5. (c) Criticality Safety Index: 0.0

6. Physical form, chemical properties, chemical compatibility, configuration of waste containers and contents, isotopic inventory, fissile content, decay heat, weight, center of gravity, and radiation dose rate must be determined and limited in accordance with CH-TRAMPAC, Rev. 2.

7. Each payload container must be assigned to a shipping category in accordance with CH-TRAMPAC, Rev. 2, Section 5.1, "Payload Shipping Category." For a payload assembly made up of payload containers with the same shipping categories, each payload container and payload assembly must not exceed the allowable wattage in accordance with CH-TRAMPAC, Rev. 2, Section 5.2.3, "Hydrogen Gas Generation Rate and Decay Heat Limits for analytical category" or must be tested for gas generation in accordance with CH-TRAMPAC, Rev. 2, Section 5.2.5, "Unified Flammable Gas Test Procedure." For a payload made up of payload containers with different (nonequivalent) shipping categories, the flammability index of each payload container must not exceed 50,000 in accordance with CH-TRAMPAC, Rev. 2, Section 6.2.4, "Mixing of Shipping Categories," and Appendix 2.4 of the CH-TRU Payload Appendices, "Mixing of Shipping Categories

and Determination of the Flammability Index." Each content code LA 154 and SQ 154 payload container must be assigned to a shipping category in accordance with Appendix 6.12 of CH-TRU Payload Appendices. Content code LA 154 payload containers may only be assembled with other payload containers belonging to content code LA 154 or dunnage in accordance with Appendix 6.12 of CH-TRU Payload Appendices. For a payload of content code LA 154 or SQ 154 containers with different shipping categories, the flammability index of each payload container must not exceed 50,000 in accordance with Appendix 6.12 of CH-TRU Payload Appendices.

8. Payload containers within a package shall be selected in accordance with CH-TRAMPAC, Rev. 2, Section 6.0, "Payload Assembly Requirements." Payload containers of content code LA 154 shall be assembled in accordance with Appendix 6.12 of CH-TRAMPAC, Rev. 2.

9. Each payload container must be vented in accordance with Section 2.5, "Filter Vents," of the CH-TRAMPAC, Rev. 2. Drums which were not equipped with filtered vents during storage must be aspirated in accordance with CH-TRAMPAC, Rev. 2, Section 5.3, "Venting and Aspiration."

10. For close-proximity and controlled shipments meeting the conditions specified in Appendices 3.5 and 3.6, respectively, of CH-TRU Payload Appendices, shipping periods of 20 days and 10 days may be applicable. The shipping period for any mode of transport is not to exceed 60 days. For content code LA 154 and SQ 154 shipments, the shipping period as defined in Appendix 6.12 of the CH-TRU Payload Appendices is not to exceed 5 and 10 days, respectively.

11. In addition to the requirements of Subpart G of 10 CFR Part 71:

    (a) Each package must be prepared for shipment and operated in accordance with the procedures described in Chapter 7.0, "Operating Procedures," of the application, as supplemented. For content code LA 154 payloads, each package must be prepared for shipment and operated in accordance with the procedures described in Chapter 7.0 of the application, as modified by Appendix 6.12 of CH-TRU Payload Appendices.

    (b) Each package must be tested and maintained in accordance with the procedures described in Chapter 8.0, "Acceptance Tests and Maintenance Program," of the application, as supplemented.

    (c) Prior to each shipment, the lid and vent port seals on the inner and outer containment vessels must be leak tested in accordance with Sections 7.1.5 and 7.1.6 of the Safety Analysis Report.

    (d) All free standing water must be removed from the inner containment vessel cavity and the outer containment vessel cavity before shipment.

12. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

13. Expiration date: August 31, 2009.

REFERENCES

Washington TRU Solutions, LLC, October 4, 2004 and March 4 and June 8, 2005.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Michael T. Markley, Acting Chief
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Date: 07/19/2005

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION REPORT
Docket No. 71-9218
Model No. TRUPACT-II Package
Certificate of Compliance No. 9218
Revision No. 18

SUMMARY

By application dated October 4, 2004, as supplemented March 4 and June 8, 2005, Washington TRU Solutions, LLC, on behalf of the Department of Energy, requested an amendment to Certificate of Compliance No. 9218, Revision No. 17, for the Model No. TRUPACT-II package. The amendment request included the following changes:

SAFETY ANALYSIS REPORT:

- Changing the revision number from Revision 20 to Revision 21, and the date.

CH-TRAMPAC:

- Changing the revision number from Revision 1 to Revision 2, and the date.
- Revising Page xiv to update the title of Appendix 6.12.
- Revising Section 1.1, Page 1–1 to reflect the revised scope of Appendix 6.12.
- Revising Section 2.2.1, Page 2.2-1 to clarify that empty 55-gallon drums(s) can be used as dunnage container(s) to complete a payload of pipe overpacks.
- Revising Table 3.1-1, Page 3.1-4 to remove Ten-Drum Overpack (TDOP) as authorized payload container for HalfPACT.
- Revising Section 5.0, Page 5.1-1 for referencing Appendix 6.12 of CH-TRU Payload Appendices to which Content Code SQ 154 has been added.
- Revising Section 6.0, Page 6.1-1 for referencing Appendix 6.12 of CH-TRU Payload Appendices to which Content Code SQ 154 has been added.

CH-TRU PAYLOAD APPENDICES:

- Changing the Revision number from Revision 0 to Revision 1 and the date.
- Revising Page ii to update the title of Appendix 6.12.
- Correcting a typographical error in Page 2.2-9 for the resistance factor for the SWB overpack with a filter type of 7.4×10^{-6} moles/second/mole fraction.
- Correcting a typographical error in the equation for Y_{ICL} on Page 3.9-18.
- Correcting typographical errors in Equations (5) and (6) on Page 3.10-3 and Equation (20) on Page 3.10-6.
- Revising Appendix 6.12 to extend the methodology previously approved for CH-TRU waste from Technical Area 54 at Los Alamos National Laboratory (LANL) to the shipment of high-wattage CH-TRU waste from any DOE site.

Based on the statements and representations in the application, the staff agrees that the changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

1. GENERAL INFORMATION

The changes applicable to this section are related only to the contents and drawings.

1.1 Contents

The following paragraphs describe the major changes with respect to the contents of the TRUPACT-II packaging and the staff evaluation of these changes. The editorial and correctional changes made to the Safety Analysis Report (SAR), CH-TRAMPAC, and CH-TRU Payload Appendices by the applicant are not discussed.

CH-TRAMPAC

Most of the changes made to CH-TRAMPAC have been editorial, correctional, and for clarification purposes. The remaining changes were due to adding the reference to CH-TRU Payload Appendix 6.12 for content codes SQ 154 in specifying the compliance with the gas generation requirements.

The staff agrees with the editorial, correctional, and clarifying changes made to CH-TRAMPAC. Furthermore, the staff agrees with changes made to CH-TRAMPAC in order to reference CH-TRU Payload Appendix 6.12 for content codes SQ 154 compliance with the gas generation requirements.

CH-TRU Payload Appendices, Revision No. 1, Appendix 6.12

The proposed amendment extends the use of the methodology described in CH-TRU Payload Appendix 6.12 for the shipment of high-wattage CH-TRU waste to other DOE sites whose waste can be classified under Content Code SQ 154. Previously, only waste generated at the Los Alamos National Laboratory and classified as Content Code LA 154 could be shipped under these specific conditions and controls. The payload containers and packaging configurations for Content Codes LA 154 and SQ 154 are provided in Section 6.12.10 of the CH-TRU Payload Appendices, Appendix 6.12.

Based on operational experience at LANL with the evacuation process, the limits for content code LA 154 have been reevaluated, assuming a final evacuation pressure of 2 torr. Previously, a final pressure of 50 mtorr was considered. As a consequence, the flammable gas generation rate and decay heat limits for content code LA 154 have been reduced. Due to the geographical proximity between LANL and the WIPP site, a 5-days shipping time is still assumed. The new values are shown in the following table:

Content Code LA 154 Flammable Gas Generation Rate and Decay Heat Limits

Content Code	**Flammable Gas Generation Rate Limit per Drum** (moles/second)	**Decay Heat Limit per Drum** (watts)
LA 154A	2.0581E-7	1.8219
LA 154B	2.7172E-7	2.4053
LA 154C	1.8936E-7	1.6762
LA 154D	2.3173E-7	2.0513

For Content Code SQ 154, a shipping time of 10 days is assumed, based on a previously approved study of controlled shipments from different DOE labs to the WIPP site, as outlined in Appendix 3.6 of the CH-TRU Payload Appendices. Considering the 12-hour minimum evacuation process in order to bring the ICV vacuum pressure down to less than or equal to 2 torr, the following limits are then derived:

Content Code SQ 154 flammable Gas Generation Rate and Decay Heat Limits

Content Code	**Flammable Gas Generation Rate Limit per Drum** (moles/second)	**Decay Heat Limit per Drum** (watts)
SQ 154A	1.0924E-7	0.9670
SQ 154B	1.6075E-7	1.4230
SQ 154C	1.2298E-7	1.0886
SQ 154D	1.4949E-7	1.3233
SQ 154E	9.8873E-8	0.8752
SQ 154F	2.6261E-7	2.3247
SQ 154G	1.0633E-7	0.9412

In addition, all payloads comprised of containers belonging to Content Codes LA 154 and SQ 154 still must meet the design limit of 40 watts per TRUPACT-II.

Mixing of shipping categories is allowed only within containers of a single content code (e.g., all containers within a payload must belong to Content Code LA 154). Limits applicable under

of shipping categories are addressed in Section 6.12.9 of the CH-TRU Payload Appendices, Appendix 6.12, where flammability indexes (FI) are defined. A payload is qualified for shipment only if the FI of each payload container is a non-negative number less than or equal to 50,000.

Section 5.0 of the CH-TRAMPAC was revised to indicate that compliance with the gas generation requirements for Content Code SQ 154, in addition to Content Code LA 154, is described in Appendix 6.12 of CH-TRU Payload Appendices.

Section 6.0 of the CH-TRAMPAC was revised to indicate that compliance with the payload certification requirements for Content Codes SQ 154, in addition to Content Code LA 154, is described in Appendix 6.12 of CH-TRU Payload Appendices.

The staff agrees with the applicant's conclusion that the package meets the requirements of 10 CFR Part 71 when the allowable contents are limited as described in the CH-TRAMPAC document and related Sections of the CH-TRU Payload Appendices document.

No other changes were made to the SAR, the TRAMPAC, or the Payload Appendices.

Conclusion

The applicant adequately described the amended contents of the Model No. TRUPACT-II package as required by 10 CFR 71.33(b). In addition, the applicant evaluated the amended contents with respect to potential for flammable gas generation, and the potential presence of flammable VOCs. The staff agrees with the applicant's conclusion that the package meets the requirements of 10 CFR Part 71 when the contents are limited as described in the CH-TRAMPAC document and related sections of the CH-TRU Payload Appendices document.

CONDITIONS

Condition No. 5(c) of the certificate was revised to delete the wording "Minimum transport index to be shown on label for nuclear criticality control" and leave the wording "Criticality Safety Index" as defined in 10 CFR 71.4 that became effective October 1, 2004 (69 FR 3698).

Condition No. 12 of the certificate was revised to clarify that the package is approved for use under the general license provisions of 10 CFR 71.17. This change is due to a revision in the numbering of the sections in 10 CFR Part 71 that became effective on October 1, 2004 (69 FR 3698).

CONCLUSION

The Certificate of Compliance has been revised to reference Revision No. 21 of the SAR with associated changes. The changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9218, Revision No. 18, on July 19, 2005 .